Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Ohio** Print Date: **3/9/2000**

Site Summary Level: **Fernald Environmental Management Project** HQ ID: **0241**

Project **OH-FN-10 / Mixed Waste**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

The Mixed Waste project involves the planning and implementation of the characterization, treatment, storage, and disposal of legacy mixed wastes produced in ongoing operations at the FEMP.

Definition of Scope: The Mixed Waste Project encompasses the characterization, treatment, storage, and disposal of existing and newly-generated mixed wastes as specified in the FEMP Site Treatment Plan. This element also includes scope for the disposition of hazardous wastes generated during routine operations.

Legacy mixed waste scope includes stabilization of mixed wastes, treatment of process residue mixed waste, diposal of PCB containing wastes, disposal of mixed wastes through the waste water treament plant, and treatment and disposal of mixed wastes not specifically provided for in a specific work plan.

Hazardous waste dispostion includes treatement and disposal of silver solutions, treatment and disposal of waste chemicals generated in the FEMP analytical lab, disposal and/or recycling of used motor oil, and disposition of hazardous wastes not specifically covered in other projects or work plans.

Technical Approach: The Site Treatment Plan, approved by the Ohio Environmental Protection Agency, has established the schedule and treatment of Fernald mixed low level wastes. The treatment of this material includes stabilization, processing at the AWWT, incineration at the Oak Ridge TSCA incinerator, and disposal at a permitted commercial disposal facility.

Technology Needs: With the unsatisfactory results from the Terra-Klean process for treating PCB-contaminated low level wastes, a new need for Mixed Waste Projects (OH-F043) was identified. The need is for obtaining comprehensive treatment systems for contaminated soils, sludges, and debris. A specific need (OH-F041) was identified to investigate the potential use of jacketed macroencapsulation for stabilization of some mixed waste.

Project Status in FY 2006:

Waste treated and disposed of off site.

Post-2006 Project Scope:

Waste treated and disposed of off site.

Project End State

Access to the OSDF will remain restricted and monitored and under institutional controls in perpetuity. The remainder of the site is expected to achieve final cleanup levels which could support various land uses. However, the decision to limit use to ecological restoration and recreational use was made based on DOE's Natural Resource Damages Act obligations and stakeholder input. Residential and agricultural uses will not be considered

Project Description Narratives

for any portion of the site consistent with the recommendations of the Fernald Citizens Advisory Board. Industrial uses may be considered for the 23 acres of potential economic development land. DOE, or a successor agency, will maintain stewardship responsibility for the site.

Cost Baseline Comments:

Assumptions are that mixed legacy waste will be off-site by 2003; cost and schedules are based on the current Waste Acceptance Criteria (WAC) and treatment plans; the present level of RCRA, CERCLA, and NEPA integration will be maintained or improved; potential incremental funding of remediation contracts; both hazardous and/or mixed waste will continue to be generated throughout the lifetime of the FEMP Project; and there is no contingency. Estimates to support the baseline for this PBS were completed using a bottoms-up approach.

The Ohio Field Office has an aggressive cost savings program in place to contain or reduce the Total Estimated Cost of the project; however, there is potential for cost growth at the Fernald Environmental Management Project (FEMP) because the baseline estimates do not include contingency, and Operable Unit 4 (Silos Project) is in the process of amending the Record of Decision with the EPAs.

Safety & Health Hazards:

The hazards of this project include radiological hazards due to penetrating radiation as well as the potential for internal dose from radionuclide uptake. Physical hazards include injury from heavy equipment operations and hoisting and rigging. Potential exposure to hazardous chemicals may also be encountered. In addition, workers can be expected to encounter normal occupational hazards such as lifting, tripping, or falling. Weather extremes expose personnel to heat and cold stress conditions.

Safety & Health Work Performance:

The resources necessary to accomplish the work safely are provided through the Authorization basis, the FEMP`s Safety Performance Requirements manual, the Radiation Protection Program, and through the resources allocated to the site`s safety management system in the following functional categories: radiological safety, industrial hygiene, criticality safety, occupational safety and health, emergency management, fire safety, and occupational medicine. Safety and health resources are planned and allocated into these categories by cost centers through the work breakdown structure. Funding requirements will be decreased as the project is completed.

PBS Comments:

This project is required by the FFC Act with milestones and actions specified in the FEMP Site Treatment Plan.

The FEMP has already undergone strategic planning to accelerate the cleanup from 25 years to 10 years. This has resulted in a significant amount of savings. To further reduce mortgage costs and allocate additional funds to the cleanup activities requires: a) the removal of the nuclear materials from the site; b) completion of safe shutdown activities; c) utility reduction projects, and d) improved technology for waste excavation and transport. A factor that allowed the FEMP to pursue accelerated cleanup is the agreement and recommendations made by the Citizens Task Force on cleanup levels and disposition of the waste (amount and waste acceptance criteria levels for onsite disposal facility and disposition off-site for wastes above the waste acceptance criteria). Major efforts at recycling materials from the site have been initiated to help reduce/minimize the size of the disposal cell.

Fernald developed and implemented an accelerated schedule in FY 1995. This baseline was validated and granted Level 1 approval on August 21,

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Project Description Narratives

1996. Impacts to the baseline due to the current funding targets will cause a three year schedule extension. Fernald has committed to implementing cost savings, productivity improvements, and incremental funding to complete the project within the FY 2006 timeframe.

Baseline Validation Narrative:

On October 29, 1998, DOE-FEMP received DOE-HQ approval on the Fiscal Year 1999 Replan Baseline Change Proposal to the current FEMP Baseline. The FEMP Baseline had been previously validated after DOE-HQ completed their review and provided their approval on August 21, 1996. Many internal and external reviews have been performed on the FEMP Baseline. In March 1998, the U.S. Corps of Engineers performed an external cost review on the OSDF project with results showing the disposal cell estimates consistent with industry standards. In August 1997 and January 1996, external cost reviews were performed on Operable Unit 4, one by the U.S. Corps of Engineers and one by the U.S. Department of Interior (DOI) and the U.S. Department of Energy (DOE). In June 1996, LMI, Janson Associates, and Burns & Roe performed an external cost review on support costs showing the cost estimates were reasonable. In July 1995, DOI and DOE performed an external cost review on Operable Unit 1 and made formal recommendations to generate technical and/or economic advantages. In September 1993, MTC, Booz-Allen, and Burns & Roe performed an external cost review on the FEMP site and had no significant findings. In addition to external cost reviews, since 1991 almost fifteen internal reviews have been performed.

General PBS Information

Project Validated? Yes **Date Validated:** 10/29/1998

Has Headquarters reviewed and approved project? Yes

Date Project was Added: 12/1/1997

Baseline Submission Date: 7/8/1999

FEDPLAN Project? Yes

Drivers:

CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
Y	Y	N	N	N	N	N	Y

Project Identification Information

DOE Project Manager: John Sattler

DOE Project Manager Phone Number: 513-648-3145

DOE Project Manager Fax Number: 513-648-3076

DOE Project Manager e-mail address: john.sattler@fernald.gov

Is this a High Visibility Project (Y/N):

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Project **OH-FN-10 / Mixed Waste**

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	37,052	0	37,052	9,514	6,036	6,547	6,548	5,425	5,242	8,000	541	436	451	462	434
PBS Baseline (constant 1999 dollars)	36,215	0	36,215	9,514	6,036	6,547	6,548	5,425	5,104	7,585	499	392	395	394	360
PBS EM Baseline (current year dollars)	37,052	0	37,052	9,514	6,036	6,547	6,548	5,425	5,242	8,000	541	436	451	462	434
PBS EM Baseline (constant 1999 dollars)	36,215	0	36,215	9,514	6,036	6,547	6,548	5,425	5,104	7,585	499	392	395	394	360

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.10%

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2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 9/1/1999

Current Projected End Date of Project: 9/30/2006

Explanation of Project Completion Date Difference (if applicable):

This completion date has been extended due to the additional workscope from nuclear materials. Because of the nuclear materials being declared as waste, the entire waste management program, including nuclear materials, low level waste, and mixed waste (PBS-08, PBS-10, PBS-11), have been levelized to maintain these programs and to continue to fund other, higher priority work scope.

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	21,842	**Actual 1997 Cost:**	6,036	**Actual 1998 Cost:**	6,548
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	9,258	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**			250
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	9,508				

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):	14,480	$14,480K due to higher labor cost projections and shutdown of waste shipments in FY98.
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	23,988	
Additional Amount to Reconcile (+):	-3,834	($3,667K) due to FY97/FY98 Uncosted Balances. ($167K) due to FY97 Actuals escalation error in IDMS.

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Project Reconciliation

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): **20,154**

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Complete Chemical Treatment Project.	W8ADDN9090		9/30/2001	9/30/2001			Y				
Initiate mixed waste treatment and disposition.			10/1/1992								
Complete disposition of mixed waste.			9/30/2006								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Complete Chemical Treatment Project.	W8ADDN9090										
Initiate mixed waste treatment and disposition.				Y							
Complete disposition of mixed waste.					Y	Y					

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 20(
MLLW														
Treatment	M3	0.00	0.00	0.00	0.00		0.00							
MLLW														
Storage	M3							510.00	0.00					
MLLW														
Comm. Disp.	M3	0.00	0.00	0.00	0.00		0.00							

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Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 20(
MLLW														
Ship to DOE Disp.	M3	0.00	0.00	0.00	0.00		0.00							
LLW														
Treatment	M3	0.00	0.00	0.00	0.00		0.00							
LLW														
Storage	M3							0.00	584.00	134.00	0.00			
LLW														
Ship to DOE Disp.	M3	1,954.00	0.00	1,954.00	0.00		0.00	1,120.00	10.00	690.00	134.00			
Rem. Waste														
Disposed	M3	0.00	0.00	0.00	0.00		0.00							

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
MLLW													
Treatment	M3												
MLLW													
Storage	M3												
MLLW													
Comm. Disp.	M3												
MLLW													
Ship to DOE Disp.	M3												
LLW													
Treatment	M3												

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Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
LLW Storage	M3												
LLW Ship to DOE Disp.	M3												
Rem. Waste Disposed	M3												

Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
MLLW Treatment	M3									102.60
MLLW Storage	M3									
MLLW Comm. Disp.	M3									0.00
MLLW Ship to DOE Disp.	M3									132.00
LLW Treatment	M3									0.00
LLW Storage	M3									
LLW Ship to DOE Disp.	M3									824.00
Rem. Waste Disposed	M3									0.00

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Technology Needs

Site Need Code: OH-F041

Site Need Name: Jacketed Macroencapsulation of Mixed Wastes

Focus Area Work Package ID: MW-08 **Focus Area Work Package:** Facilitating Deployment for Unique Wastes

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Stabilized Contaminates using Arrow-Pak Polymer Macroencapsulation		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01266: MLLW-8A4.1 - MLLW-Contaminated Debris TSAA	Y	N
	01264: MLLW-8A2.1 - MLLW-Contam Debris (Characteristic)	Y	N

Site Need Code: OH-F043

Site Need Name: Mixed Waste Treatment Projects

Focus Area Work Package ID: MW-07 **Focus Area Work Package:** Alternatives to Incineration to Reduce Emission Hazards.

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Direct Chemical Oxidation		
Polymer Microencapsulation		
Salt and Ash Stabilization - Stabilize High Salt Content Waste Using Cementitious Process		
Alternative Oxidation Technology - PCBs		
Kinetic Mixer		

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Technology Needs

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01255: MLLW-17A3 - MLLW-PCB Contam Sludge	Y	N
	01260: MLLW-4A3 - MLLW-PCB & F-Listed Contam Soils	Y	N
	01266: MLLW-8A4.1 - MLLW-Contaminated Debris TSAA	Y	N
	01259: MLLW-4A2 - MLLW-Contam Soils/Residues (Characteristic)	Y	N
	01254: MLLW-17A2 - MLLW-Contam Sludge (Characteristic)	Y	N
	01264: MLLW-8A2.1 - MLLW-Contam Debris (Characteristic)	Y	N